AUDIENCE PARTICIPATION IN A DANCE-CLUB CONTEXT: DESIGN OF A SYSTEM FOR COLLABORATIVE CREATION OF VISUALS

BY GERRIT KAISER
DIGITAL MEDIA, UNIVERSITY OF BREMEN
BREMEN, GERMANY
GERRIT@TZI.DE

GUSTAV EKBLAD
INTERACTION DESIGN, K3 SCHOOL OF ARTS AND COMMUNICATION
MALMÖ, SWEDEN
KID04033@STUD.MAH.SE

LINNÉA BROLING
INTERACTION DESIGN, K3, MALMÖ UNIVERSITY, SWEDEN
KID04045@STUD.MAH.SE

We investigated possibilities of improved interaction between artist and audience in the context of the dance club culture. Music club events are already highly interactive and collaborative experiences, so we focused on the role of media and amateur content creation. We identified a number of design challenges and constraints and developed a design concept accordingly. Our system allows for audience members to collaborate with a professional VJ ("video-" or "visual jockey") in the selection and creation of live visuals that will be displayed alongside and fitting to the music on a screen at the dance-floor. The audience members interact with the system through a physical "station" that allows input and creation of visual material. The VJ then selects from that material and arranges a engaging live presentation.

INTRODUCTION

The club environment contains a lot of interaction, mainly visitor to visitor but also between the visitor and the people employed by the club such as bartenders and DJs (disc jockey). There is not much a visitor can do to affect the environment, apart from asking the DJ if he or she would like to play a certain song. The people that attend the club should be able to enhance their own and everyone else's experience by adding a personal influence to the visit to make it more interactive. We want the club to be a place where one can share visual material with all the other visitors, and where one can experience what other people want to show.

A club is an exciting place, with a lot of different areas and activities, which makes it a suitable place for innovative experiments like this.

This short paper will present a concept that shows how the clubbing experience can be more interactive and engaging by letting the visitors be responsible for the visuals that are displayed. We will first provide a context for our concept by giving an overview over the work others have done regarding expression, interaction and audience participation in night clubs. We also provide pointers to research about visuals in the club context as well as the role VJs ("video-" or "visual jockey"), DJs and (mobile) technology play in contemporary dance

club culture. After describing our research methodology, we will summarise our discussion of the problem and explain the resulting design concept.

CONTEXT

Much of the research revolving around audience participation in a dance-club context centres on novel and innovative interfaces. These enable patrons of music or dance-clubs to take part in the creation of the collective experience and control some, or all aspects of the auditive and visual impressions.

INTERFACES FOR MUSICAL AND VISUAL EXPRESSION

Bayliss, Sheridan and Villar designed a sensor-augmented poi (a rope-like dancing accessory) for clubbers in trance and techno clubs to allow a generated visualisation of the participant's movement elsewhere in the club (Bayliss, Sheridan & Villar 2005). Feldmeier and Paradiso developed a low-cost disposable wireless sensor that can be distributed to a large group of participants to enable them to participate in an interactive performance (Feldmeier & Paradiso 2001). Hromin et. al. propose a system with a similar interaction paradigm where the dancers wear clothing with embedded Bluetooth-connected sensors that transmit information about the dancers' movements to a central system that transforms this data into musical modifications while still incorporating a human DJ (Hromin et. al. 2003). Ulyate and Bianciardi devised a concept for a completely "interactive dance club" where collaborative interactive generation of "coherent" and "satisfying" music and visuals is enabled by multiple sensor-equipped "zones" with different interaction paradigms like objects with embedded proximity sensors or floor-mounted pads that register dancing and stepping movements (Ulyate & Bianchiardi 2001). HP researcher Dave Cliff developed "hpDJ", a system designed to "totally automate the tasks performed by a human nightclub [sic] DJ" that is also equipped with various sensors to gather feedback from the audience (Cliff 2006). Blaine's and Fels' "Contexts of collaborative musical experiences" (Blaine & Fels 2003) provides an overview of participative interfaces that enable new forms of musical expression and offers guidelines and criteria for the design of such systems that allow even unskilled participants to create collective musical performances.

Other researchers have concentrated on the possibility of distributing the process of music choice amongst the listeners.

O'Hara et. al. designed a music-voting system for a café/bar environment that employed a touch-screen terminal and hand-held computers on the tables to enable the patrons to hold a democratic vote on the next song to be played (O'Hara et. al. 2006). Crossen and Budzik describe their Flytrap Active Environment that "automatically constructs a soundtrack that tries to please everyone in the room" by analysing the listener's music tastes through observation of their listening habits on their computers (Crossen & Budzik 2006).

VISUALS

Kenta Motomura, gives an introduction into the role of a VJ and the images he produces based on this own experience and in the context of the artistic impression at a specific dance club, in the "club scene" in general and in relation to worldwide media art (Motomura 2005). Annet Dekker provides an extensive history of VJing and places this development in the context of video art and synaesthetic performance (Dekker 2003).

In his Bachelor's thesis "Going Audio-Visual", Roman Jurik poses questions regarding the "future of visual jockeying & visual projections & their impact on live music entertainment" (Jurik 2004, pp. 52ff.). After working together with the VJ community, he concluded that VJs see themselves as independent visual artists that want to keep their integrity and are seeking other opportunities outside of just being relegated to visualising the music of a DJ in a dance club. According to Jurik, live visuals make the experience of a live event more engaging for the audience while also taking pressure of off the musical performers and will consequently become the "mainstream for the club/dance scene" (op. cit., p. 56).

MOBILE TECHNOLOGY

As mobile technology plays an increasingly important role in our daily life, its use has to be taken into account when designing social interactions. Especially mobile phones and digital cameras are widespread and relevant for the topic at hand.

Moore investigates the use of mobile phones in dance clubs (Moore 2006). She describes the findings of a study of dance music (and "dance drugs") consumption in the club culture in the North-West of England. Through extensive observation and small-scale questionnaires and interviews with "clubbers" it was found that mobile phones play an important role for members of this subculture. They are a means of organising and orchestrating the collective experience with friends, "to create and maintain clubbing friendships", as a "key technological 'tool' used in order to procure illegal substances" (i.e. so-called "party drugs") and ultimately also to create a "personal 'safe' space for the clubber in the in-club setting, helping to manage feelings of nervousness and anxiety" created by drug use. The mobile phone thus has, according to Moore, "different emotional and symbolic meanings" for its users and is a "valuable and valued artefact" for clubbers.

Kindberg et. al. conducted an in-depth study of camera phone usage. One of their findings was that "the most common social reason for capturing an image was to enrich a mutual experience by sharing an image with those who were present at the time of capture. Most of these images focused on people and were taken at social gatherings[…]" (Kindberg et. al. 2005, p. 45).

SOCIAL INTERACTION

In a recent paper, Gates, Subramanian and Gutwin stated that previous attempts by researchers at designing technology for crowd-and-DJ interactions night-club environments "have not always [been] met with success" (Gates, Subramanian & Gutwin 2006, p. 70) and tried to build an understanding of night-club

interaction to design better technologies and systems in this area. They carried out an interview study focusing on DJ-audience interactions, concluding that "DJs gather a wide variety of information about their audiences, and that this information is important to them as they plan and shape the evening's musical experience". DJs also, according to this study, "took a dim view of technology designed to let crowds exert more control over the music."

METHODOLOGY

During the design process we used our own first-hand knowledge as regular club-goers as well as informal qualitative ethnographic field visits where we visited different clubs with varying audiences. The design implication for interactions in night-clubs outlined by Gates et. al. in their study of DJs' perspectives (Gates et. al. 2005, p. 78) were important guidelines for the iterative development process that ensued then and led to the design concept presented in this paper.
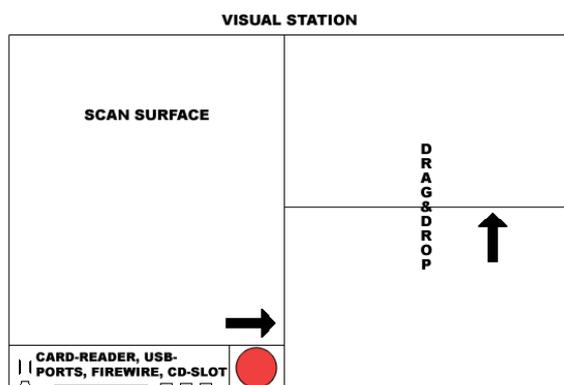
DESIGN CONCEPT

Diagram of the user interface of the "visual station"

Audience participation is facilitated by a system that allows club-goers to contribute to the creation of live visuals that are arranged by a professional VJ. The system consists of a physical input terminal, called "visual station", a series of smaller screens, a specially equipped booth for the VJ and a large main projection display. The "visual station" will be placed in a seating/ drinking ("chillout") area of the club, the small screens will be mounted on walls whereas the VJ booth and the main projection display will be placed directly adjacent to the main dance-floor.

The station consists of a large touch-screen on a table and a built-in scanner next to it. The user can bring his/ her own pictures or photos and scan them into the system or use material found at the club, such as flyers, stickers, magazines or posters. The station will also have USB ports and Firewire connections, which makes it possible for the user to plug in a USB-stick, MP3-player or a digital camera and transfer digital visual material to the station. The station will accept memory-cards from cameras and cell phones. There is also a Bluetooth connection, so the user can send pictures from his/her phone directly in to the system. With a Bluetooth wireless connection the user is able to go away about ten metres from the station, by adding

this functionality there will be less crowded around the station. In the "chillout area", there will be multiple access points to the Bluetooth network, so the user can just sit and relax in the sofas sending pictures to the station. The people standing outside in the line waiting to get in, can send images to the station via his/her mobile-phone, by sending an MMS to a specific number.

Next to the "visual station" is a big photo-booth (similar to the ones typically found at public spaces such as airports or train stations), where the user can go in and get a snapshot of him/her together with friends. On the outside of the photo-booth, is a display showing the picture the user just took.

When the user transferred his/her visual material, all the pictures are shown on one part of the touch-screen, except the ones the user transferred via bluetooth or MMS (they automatically go to the bigger displays on the walls, shown for everyone). The user can then drag
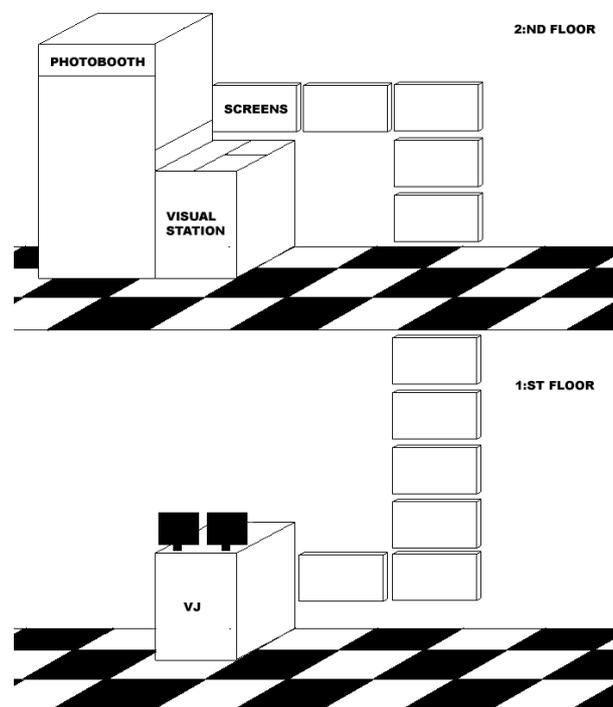

Diagram of the system in a hypothetical club with a seating area in the 2nd floor and the dance-floor below

the pictures he or she want to display for others to a field where it gets sent to the VJ.

All the material that the user submits at the "visual station" is then shown on a series of wall-mounted "small" (ca. 40") flat displays. These displays are arranged in such a way that they form a visual "queue" from the station in the relaxation zone of the club towards the booth VJ that is situated at the dance-floor. The photos the user has been taken in the photo-booth will show up on displays on the outside and after a while the picture shrinks and moves to the above-mentioned queue of displays. The pictures are moving slowly and smoothly animated from one display to another in the direction of the main display at the dance-floor.

And in the end it is the VJ that decides what is going to be projected at the dance-floor and how it will be arranged. Pictures that are left in the "queue" eventually disappear, depending on how much visual material is input. At the dancing area the clubbers will see the

pictures the VJ decided to show projected on one or several walls. It is the VJ's task to combine photos and video-clips to fit to each other and to make it look nice when projected on large (ca. 4-5m wide) surfaces.

At his control-booth the VJ is presented with a computer-based graphical interface spanning several screens. The main challenge for a live-performing VJ is to quickly find material that is suitable for the current music while at the same time making a smooth transition from the current display. Therefore the interface should be optimised on fast browsing of the available visual material. It should allow several views on the data (a list view and a thumbnail preview view, for example) as well as fast preview facilities. The software should assist the VJ in the selection as far as possible by using and displaying metadata about the images. This includes both embedded metadata in the case of digital files (EXIF in digital photos, for instance) and implicit metadata gathered during the capturing process. It should also use image analysis algorithms to categorise material and possibly provide visual search facilities.

As the collection and categorisation of the material is not exclusively done by the VJ, this aspect of the interface is the most important one with regard to the larger system outlined in this paper. Obviously, the software should also provide apt mixing and display control capabilities.

The exact design of this user interface is out of scope for this paper, but should take into account precursors in VJ mixing software like VIDVOX Grid Pro and Neon V2.

DISCUSSION

The concept tries to balance the audience's desire to participate with live artists' need for independence and integrity. It does, however, place a relatively high burden on the audience in requiring them to collect and bring material and spend time interacting with the system to submit the material. The question is, if the reward of "maybe" having self-submitted material displayed in an engaging composition at the main dance-floor is enough motivation. The Visual Station thus has to be designed in a way that makes the interaction with it hassle-free, fast and most importantly entertaining for the user.

But even when that succeeds, the diversity of night-clubs, night-club-parties and night-club-visitors present difficult challenges to the design of any system for this context. It is nearly impossible to appeal to both casual visitors of a club and devoted fans, passive and more outgoing types. Also, the local clubbing culture has to influence the design of such systems. The design as described above is more likely to work in a scenario where people only visit one club per night and spend a long time as opposed to a "club-hopping" one with a less devoted audience.

As with all schemes that allow people to anonymously display messages or pictures to a broad audience, the question of control or "censorship" arises. It is almost inevitable, it seems, that "inappropriate" or offensive pictures will be submitted. While the authority of the VJ prevents such material to be displayed on the main screen in our system, it will be visible on the wall screens. The wall screens and their immediate display of submitted content have an important role, however. They give a user of the system an instant reward and form a big part of the motivation to submit material at all. If the images had to pass a censoring authority before being displayed, the Visual Station would give a feel of a "black hole". To remedy this problem, the station would have to be designed in such a way that social control by bystanders is possible or a human would have to be tasked to constantly monitor and filter submitted content. Preselection of material is essential for VJs and DJs alike, playing someone else's completely unknown record collection is a daunting task. The demands placed on the VJ interface for visual selection are therefore quite high. But even if the software with its assisting algorithms succeeds in giving the VJ a comprehensive overview over the available material, the big question remains whether the material that is contributed by the audience is of high enough quality or suitable aesthetics for the VJ to incorporate into his compositions. This could be helped by also allowing the VJ to draw from his own collection and mixing it with the audience-submitted one. This would at the same time solve the problem of what to display at the beginning of the night when the audience hasn't uploaded much material yet. Allowing this would demote the role of the audience as important contributors, though.

FUTURE WORK

During this project, we concentrated on a system to allow audience participation for the visual part of a collective audio-visual dance experience. The concept is open and extensible, especially with regard to a musical component. Previous projects have tackled the problem of "sub-optimal" music choice (esp. Cliff 2006, Crossen & Budzik 2006 and O'Hara 2006).

If the goal is to enable audience participation in the process of music choice without supplanting a human DJ with his many advantages by a machine, a variation of our concept of a "visual station" could fill a gap. Perhaps as a "music suggestion station", where audience members can contribute music they like (or complete mixes and even original works). A system like that would also be in line with findings by Gates et. al. who report that while influence on the music choice is a frequent desire of audience members, traditional methods of exercising this interfere with the workflow of a DJ (cf. Gates 2006, p.77). It could also be combined very easily with the "visual station".

Apart from an expansion of the concept into the realm of music suggestion, the obvious route for future work would be to further develop the concept into a technical system and implement and test that system in a real-world club.

CONCLUSIONS

Based on the insights gained during our research and the constraints and design challenges we identified, we are proposing a concept that we believe could actually work in a typical dance club context. The design doesn't attempt to radically transform or supplant the existing club experience, instead enhancing and augmenting it. It takes into account the widespread usage and increased

importance of mobile technologies and the resulting social interactions.

Creating and sharing visual material is an activity that can intensify and reinforce the collaborative experience while also providing satisfying means of creative expression. We did not attempt to "democratise" the creation of the main experience. The VJs' (and DJs') role as an independent artist is very important and ultimately what makes a clubbing experience attractive in the first place. Transforming spectators to creators would, in this context, not necessarily yield satisfying results. An approach that carefully blurs the line between the classic roles and allows dancers to suggest and contribute while at the same time maintaining the authority of the VJ is a compromise that could very well enhance the experience for both sides and strengthen the link between audience and artist.

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